



Shaping the City that Decreases Overweight and Obesity through Healthy Built Environment

* PhD candidate, **MARIA A. EL HELOU¹**

¹Aristotle University of Thessaloniki, Thessaloniki, Greece

E Mail: maelhelou@arch.auth.gr

ARTICLE INFO:

Article history:

Received 08 February 2018

Accepted 05 June 2018

Available online 15 September 2018

Keywords:

Sustainable planning;
Urban planning;
Green mobility;
Physical activity;
Mental health;
Obesity;

This work is licensed under a
[Creative Commons Attribution -
NonCommercial - NoDerivs 4.0.](https://creativecommons.org/licenses/by-nc-nd/4.0/)
"CC-BY-NC-ND"

ABSTRACT

Cities are being built based on the concepts of the comfortable, easy, and fast for the inhabitants. However, what is being constructed is promoting physical inactivity, and people are finding that what was being considered as convenient for daily life is, in fact, harmful to their physical health. The life of a city relies on the activity of the inhabitants who are the breathing engine of the built environment. Hence, the balance between physical activity and mental activity (e.g., office work) should be maintained because the more people are physically healthy, the more they are productive and the more the city experiences economic growth which all leads to satisfaction and happiness among the city's inhabitants. Therefore, a city that facilitates the reach to physical activity helps its inhabitants to overcome many physical health issues such as overweight and obesity, the causes of many physical complications that can affect mental health over time. This study points to the many components of a city that beats overweight issues and especially obesity. One of this healing city's aspects is the presence of green spaces and the green mobility that typically promotes walking and cycling instead of driving cars. Moreover, this city could foster the healing of prolonged stress and overall mental health related to human inactivity. Its analysis is based on in-depth interviews and results of previous empirical research in urban planning, psychology, and neuroarchitecture regarding people's perception of the visual environment they live in. The case study is the city of Beirut: in-depth interviews were conducted with a representative sample of Beirutis (people whose families come from the Beirut city and who were born in this city and are still living in it). These interviews helped measure these participants' satisfaction with the physical activities and social life that is accessible for all the inhabitants through inclusive urban planning (such as clean open spaces, parks, sidewalks, free or inexpensive public spaces, facilities for green transportation, etc.). The results of the interviews analysis were supported with past data demonstrating the increasing obesity issues in Lebanon and previous data in urban and psychological studies that expound the way the brain processes the urban spaces that increase satisfaction and the urban areas that the city should be offering to its inhabitants for positive health outcomes. The results uncovered the cycle of physical health, mental health, and social contacts which altogether affect the soul of a city where the aim is first and foremost the right to a healthy lifestyle.

CONTEMPORARY URBAN AFFAIRS (2019), 3(2), 16-27.

[Doi:10.25034/ijcua.2018.4697](https://doi.org/10.25034/ijcua.2018.4697)

www.ijcua.com

Copyright © 2018 Contemporary Urban Affairs. All rights reserved.

1. Introduction

Hove (as cited in Mudede, 2011), noted:

The city is totally human. The steps in an apartment building are for human feet, the door knobs afford human hands, the bed is for a human back ..., the window is there for you, the streets are paved for your modes of

*Corresponding Author:

Aristotle University of Thessaloniki, Thessaloniki, Greece

E Mail: maelhelou@arch.auth.gr

transportation. This urban world didn't fall on you; it sprang from you (para. 2).

While cities' inhabitants are accommodating to the urban conditions, overweight and obesity are affecting a large number of them physically and socially (Lake & Townshend, 2006). In fact, the more the country is economically developed, the more the people from all ages are suffering from increasing obesity (Hong, Trang, Dibley, Sibbritt, Binh, & Hanh, 2010) and health and behavior issues (Cutts, Darby, Boone, & Brewis, 2009). Although genetics may play a role in overweight and obesity, cases are exceeding the biological heritage condition (Booth, Pinkston, & Poston, 2005; Hong et al., 2010) and are causing cardiovascular diseases, type 2 diabetes, changes in behavior (Hong et al., 2010), and breast cancer (Mehio, Sibai, Hwalla, Adra, & Rahal, 2003). Therefore, other conditions should be observed and analyzed such as the "area of residence, resources, television, walkability, land use, sprawl, and level of deprivation" (Booth et al., 2005, p.2). In fact, these factors affect significantly the motivation of cities' inhabitants to practice physical activities (Booth et al., 2005) such as walking, relaxing in calm urban areas, and practicing social and familial activities in urban public spaces.

The study tackles the reasons why people living in the city tend to overeat, have a sedentary lifestyle, or suffer from overweight and obesity even though they are choosing a healthy diet and practicing physical activities. These reasons are to be related to urban factors that affect personal and social factors.

To study in detail the physical environment effect on people's health and notably obesity issues, in-depth interviews were conducted with 50 Beirut inhabitants (Beirutis): 10 children (between 7 and 11 years old), 10 adolescents (between 12 and 17 years old), 10 young adults (between 18 and 39 years old), 10 middle-aged adults (ages between 40 and 65), and 10 older adults (more than 66 years old).

Even though achieving the best urban planning strategy will not eliminate all cases of built environment problems and personal and social disturbances, it will undoubtedly limit and decrease its frequency (Gunder & Hillier, 2007). The results of this study will help architects understand the urban "obesogenic factors" related to the built environment. This study will also connect the degree of the inhabitants' satisfaction in the city's urban planning regarding public spaces and activities' facilities with the obesity rate. Furthermore, it will give the opportunity for the city's inhabitants to

communicate their suggestions to architects and their perceptions of a healthy city where free activities in public spaces are available. Accordingly, architects can develop urban planning in a practical direction where the functional and the healthy meet.

2. Obesity and the City

2.1 The 21st Century Worldwide Concern

Nowadays, the contemporary city's symbol of power is the economic supremacy. Accordingly, people are "doing extra work simply to exist" (Sui, 2003, p.77). However, the city is also the place that ensures the inhabitants' well-being through providing all the facilities for physical and mental health (Lake & Townshend, 2006). An imbalance between the hard work for economic profits and the relaxation is reflected through the many disturbances in people's balance such as the case of obesity. In fact, according to the medical news today (MNT) team (2016), obesity is a serious case where the excess of body fat causing a weight that exceeds 20% of the weight that a person should have can harm health.

Even though many campaigns are done to defend the right to be overweight and eliminate physical discriminations and prejudices, obesity is a long-lasting illness (Velásquez-Meléndez, Mendes, & Proença Padez, 2013) that is increasingly spread among cities' inhabitants and affecting people of all ages due to individual conditions, but also due to urban and social conditions imposing a "cliché" physical shape and lifestyle on all the city's inhabitants. Consequently, children and adolescents are developing obesity that are difficult to treat, which threatens young and future generations' physical and social health and even life expectancies (Lake & Townshend, 2006; Dietz, as cited in Cutts et al., 2009).

On the other hand, "the food environment and built environment are closely related" (Lake & Townshend, 2006, p. 265). Cities are by that challenged in tackling all conditions that are affecting people's overweight and obesity. In reality, the efforts on research and application are emphasized whether on people or spaces but are hardly ever combining both simultaneously (Corburn, 2015). For example, the large sidewalks for pedestrian activity reveal the care for the person's health in the city and reduce the warning signs of isolation (Corburn, 2015). Yet, the developing highways promoting urban sprawl and distances among the population (Corburn, 2015) are "competing"

with the human pedestrian factor instead of equally existing in the city.

Many interventions are dealing with the educational and behavioral gaps related to obesity matters (Lake & Townshend, 2006); even physicians are treating obesity through medicines (Corburn, 2015). However, these are physical and cognitive partial treatments as they are not treating "the potential root cause" (Corburn, 2015, p. 50) of the illness such as the urban factors or the built environment conditions that are blocking or slowing down the healing process since the city's inhabitant-patient is going back to live in the conditions that caused him obesity in the first place (Corburn, 2015). Actually, many reasons can hasten obesity besides genes such as the high caloric intake, the sedentary lifestyle, the lack of sleep, and medications (MNT Editorial Team, 2016). These factors are highly related to the urban plan of a city where the opportunities to walk outdoors is limited, the technology is so elevated, and the requirements for economic profits and business competitiveness are raising. In effect, according to Sui (2003), cities with plans for managing urban development have the lowest rates of obesity whereas fast urban sprawling with fast-moving lifestyles expedites cases of obesity. Furthermore, a strong correlation was found between low land use diversity and high obesity (Booth et al., 2005). Thus, the current attempts in urban planning are integrating the human factor, which is taking into consideration the human body physical and emotional needs for better health (Sui, 2003).

As a result, "in relation to the current obesity epidemic, diet and physical activity cannot be examined in isolation" mention Lake and Townshend (2006, p. 262) because being obese does not rely solely on the fact of living in an urban obesogenic environment (Smith & Cummins, 2009). According to Lake and Townshend (2006), the built environment is particularly composed of the "physical design, land use patterns (residential, commercial, office, industrial, and other activities), [and] transportation systems" (p. 263). Northridge, Sclar, and Biswas (2003) determined the same components of a built environment. Northridge et al. (2003) added that the social components in the city are as well important to take into consideration and specified that they comprise "community investment, public and fiscal policies, and civic participation" (p. 560).

Essentially, the city is composed by the complex network of the built environment, the social frame, values, beliefs, culture, economy, and

even driving standards that can cause stress and impact overall health through chronic illnesses (Lake & Townshend, 2006). For example, high-rise buildings increase loneliness (Duhl & Sanchez, 1999). Another example is in the study of Wolf (2013) who demonstrated the importance of having "tree-lined sidewalks and shady parks" (p. 25) in the city to encourage people to be more active outdoors while trees are regulating the temperature and air cleanness of the city which affects health positively and overall life satisfaction. In fact, people feel that open areas with organized green landscape are more pleasant to walk in (Wolf, 2013). These green spaces also prolong life expectancy significantly (Takano, Nakamura, & Watanabe, as cited in Wells et al., 2007). Therefore, ensuring a walking environment should not be considered uniquely as an entertaining activity but also as a serious transportation that is essential to use (Wigan, as cited in Southworth, 2005).

Hence, the sensory experience will restore and develop the cognitive and sensory-motor process of the brains of people living in the city, reinforcing the symbolism and meanings of their city's components, making them feel safer by connecting their city's dots (Grahn & Stigsdotte, 2010). These logically connected dots will be stored in the people's unconscious minds helping them perceive the actual outside world in order and hierarchy to reach happiness and gratification through the pleasurable, the beautiful, the satisfactory, and the useful, a concept that Gestalt calls the "depth perception" (Grahn & Stigsdotte, 2010, p. 265). Therefore, throughout procedures to define the intangible in the city, as the definition of what is good, healthy, beautiful, satisfying, or secure, urban planners would be treating the insufficiencies that the vision spots through the physical environment and the socio-spatial therapy (Gunder & Hillier, 2007).

2.2. The Case of Beirut

2.2.1. Weight Issues

In 2013, the Lebanese population scored the high urbanization rate of 88%, according to the World Health Organization (WHO) and UN partners. Lebanese researchers Sibai et al. (2003) found that the rates of overweight and obesity among Beirutis were concerning when compared to developed countries. In fact, 22.5% of Lebanese children under 19 years of age are overweight or obese, more than half of the Lebanese above 20 years old (53%) are overweight, and 17% of these adults are obese

according to the results through body mass index (BMI) standards required by the WHO (Sibai et al., 2003). BMI is a "statistical measurement" using the height and weight of a person (MNT Editorial team, 2016). In Beirut, the cases of overweight or obesity reach 12% of the inhabitants (Sibai et al., 2003). The authors of this study that included 2104 participants of 3 years of age and older found that several factors are contributing to the increase of chronic illnesses in Beirut such as the city's westernization and lifestyle changes (Sibai et al., 2003).

Children and adults in Beirut are not practicing enough physical activities (Sibai et al., 2003). There is a broad spectrum of reasons. For example, as it is the case worldwide, technology such as insulation and heating and indoor cooling systems hinder the energy consumption of the human body for temperature regulation (Sobal, as cited in Wells, Ashdown, Davies, Cowett, & Yang, 2007). Moreover, the tempting elevators or escalators that are being used more often than the shady stairs (Wells et al., 2007) are unexposed to natural daylight or adequate ventilation. Another factor is the rising of electronic tablets that encourage children to play at home while sitting (Wells et al., 2007). On a broader frame, the contemporary zoning ordinances that are applied in many developed and developing cities worldwide are contributing to an augmenting sense of isolation and promoting laziness (Duhl & Sanchez, 1999). However, the mental state is highly contributing to increasing obesity among the city population. Physical inactivity and prolonged untreated stress (factor of survival) leading to depression and other physical illnesses (such as obesity) are the primary contributors to death (Grahn & Stigsdotte, 2010). In fact, contrary to the 1970s belief that obesity keeps away from depression (Crisp & McGuiness, as cited in Jansen, Havermans, Nederkoorn, & Roefs, 2008), it is at the present more evident through research that there is a complex link between overweight or obesity with increased exposure to depression (Jansen et al., 2008). Moreover, scholarly literature confirms that the illegible urban and social frames and the quality of indoor and outdoor built environment increase mental health cases, notably depression (Galea, Ahern, Rudenstine, Wallace, & Vlahov, 2005).

2.2.2. Urban State

Beirut is a "metropolitan statistical area", since this expression defines an urban agglomeration of more than 50,000 inhabitants (Northridge et al., 2003). According to the World Population

Review (2018), the city of Beirut comprises approximately 361,000 inhabitants from around the 2,272,000 inhabitants of the Greater Beirut (which is one third of 6,090,626, the total population in Lebanon), knowing that the city of Beirut that comprises 12 cadastral areas covers 21.47 km² (Kaloustian, 2015) and the Greater Beirut occupies 233 km² (Faour & Mhawej, 2014) of Lebanon's total area of 10452 km² (World Population Review, 2018). As a result, the urban density is one of the highest in the world (Kaloustian, 2015) and the immediate planning to cover the different aspects of a healthy city is imperative.

While cities in the past were built with the cooperation between urban planners and public health experts, the fast growth of the cities hampered the continuity of this cooperation. Moreover, the concept of the fast city overrated the need for a car, making it as one of the most important factors in the city to accelerate the flow of the city's movement. At the same time, pedestrianism was perceived as negative due to the belief that pedestrians slow down the city's productivity and the car traffic movement at streets crossings (Southworth, 2005). As a result, the streets privilege cars and dwindle pedestrians' spaces and the continuous paths they use to reach their destination. However, pedestrianism is regaining its importance through recent research interest in public health related to the urban and built environment (Northridge et al., 2003). In fact, the 1980s movement of "Neo-traditional Planning" (Duhl & Sanchez, 1999) or "New Urbanism" envisioned walkable cities and public transport use to achieve a satisfying rate of wellbeing among cities' inhabitants as stated the guidelines of the Charter of New Urbanism (CNU). The CNU has in fact mentioned in its fourth congress in 1996 its encouragement for urban development within the frame of the urban heritage conservation, accessibility, and respect of ecological and human balance (Lake & Townshend, 2006). These guidelines enhance the pleasurable walkability in the city. Nevertheless, a definition for walkability or walkable city should be precise. A valid interpretation proposed by Southworth (2005) is the following: "walkability is the extent to which the built environment supports and encourages walking by providing for pedestrian comfort and safety, connecting people with varied destinations within a reasonable amount of time and effort, and offering visual interest in journeys throughout the network" (p. 247-248). In effect, people rate the quality of their environment (judging by that the quality of their life)

according to their visual perception that is the source of information process in the brain along with the individual and collective memories (Grahn & Stigsdotte, 2010). In areas where people consider that their walkable streets are limited in quantity, safety, and light, obesity was found in high rates (Booth et al., 2005). These people considered as well the degree to which the streets designated for walking in the city are rugged (Booth et al., 2005). In fact, an organized mixed zoning with multiple land use allows the decrease of travel distances which increases the likelihood to walk (Northridge et al., 2003). Although 22 public parks in Beirut and 2 in the suburbs are detected, these public areas are quite small, having altogether an average area of 0.8 square meters per person, a number that does not meet the WHO requirement of 9 square meters per person minimum (Najib, 2014). While people in urban areas where urban parks are reachable through walking have three times more the opportunity to exercise daily (Giles-Corti et al., as cited in Cutts et al., 2009), it is clear that some regions of Beirut city lack green parks and that there is a lack of walkable connectivity (Figure 1). As a result, the inhabitants have to use the car to reach a green destination. While the natural environment is an urban primary need that enhances positively human health (Northridge et al., 2003) and decreases mental fatigue (Kaplan, as cited in Grahn & Stigsdotte, 2010) and mortality rates (Mitchell & Popham, as cited in Grahn & Stigsdotte, 2010), the "car-centric culture" (Duhl & Sanchez, 1999, p.11) is being prioritized over the human in Beirut. Hence, the chances of physical activity decrease for a large number of the people living in the city and the inhabitants' segregation increases, advancing social isolation and the illnesses caused by it. Moreover, overcrowded neighborhoods limiting the sense of personal privacy and the lack of green adjacent spaces intensify the psychosocial stress related to depression (Galea et al., 2005), a symptom found in the case of obesity.

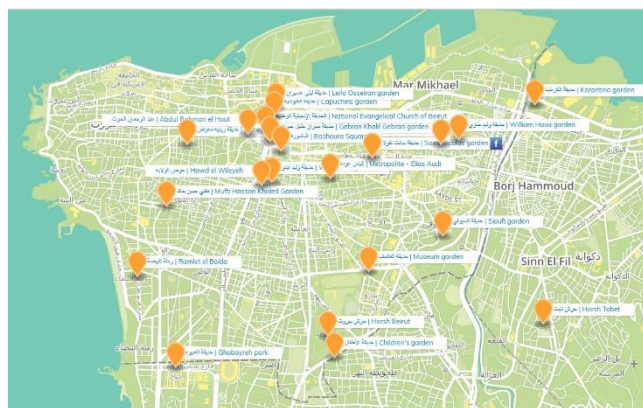


Figure 1. Plan showing the parks in Beirut (map adapted from Beirut green guide; URL: <http://beirutgreenguide.com/>)

3. Research Method

In-depth interviews were conducted with 50 Beirutis: 10 children (between 7 and 11 years old), 10 adolescents (between 12 and 17 years old), 10 young adults (between 18 and 39 years old), 10 middle-aged adults (ages between 40 and 65), and 10 older adults (more than 66 years old). The classification of ages is done according to professor Laura E. Berk (2010) classification of physical and cognitive development through the lifespan. The participants come from the different cadastral areas of Beirut city. They were born and raised in this city and still live there. Half of the participants in each category were also chosen according to their medical diagnose cases (cardiovascular diseases, type 2 diabetes, breast cancer, metabolic disorders, and difficulties moving) caused by obesity. A consent form stating the respect for privacy and anonymity was given to each participant or the under 18 of age participant's parents. According to age, the categorized participants had to answer the following questions related to their lifestyle in Beirut and their ability to do the activities they want and to move according to their free choices of transportation in their city.

The children's questions:

Are you playing in the outdoor areas near the house? Why?

Are you able to walk as much as you want in Beirut with your parents?

1. Are you going out with your parents? If yes, where do you go?
2. Why do you think children get fat in Beirut?

The adolescents' questions:

1. Are you able to walk as much as you want in Beirut? Why?
2. Are you able to practice your physical activities in outdoor areas of Beirut? Why?

3. Where do you go to for friends' gatherings? Why?
4. Are there missing elements in Beirut to have a pleasant, walkable city? If yes, what are they?
5. What do you think are the reasons for overweight or obesity in Beirut?

The young and middle-aged adults' questions:

1. Are you able to walk as much as you want in Beirut? Why?
2. Are you able to practice your physical activities in outdoor areas of Beirut? Why?
3. Where do you go to for friends' gatherings? Why?
4. How do you describe Beirut with its parks, gardens, squares, and empty plots compared to your childhood experience?
5. Are there missing elements in Beirut to have a pleasant, walkable city? If yes, what are they?
6. What do you think are the reasons for overweight or obesity in Beirut?

The older adults' questions:

1. How easy is it for you to move to Beirut? Why?
2. Are you able to walk as much as you want in Beirut? Why?
3. Are you able to practice your physical activities in outdoor areas of Beirut? Why?
4. Where do you go for friends' gatherings? Why?
5. How do you describe Beirut with its parks, gardens, squares, and empty plots compared to your past experience?
6. Are there missing elements in Beirut to have a pleasant, walkable city? If yes, what are they?
7. What do you think are the reasons for overweight or obesity in Beirut?

Added to the questions, each participant from the adolescent and early, middle, and late adulthood categories was shown the photos of the Corniche Beirut, the Sioufi park, the Horsh Beirut (i.e., the Pine forest) park, the René Mouawad park, the Martyrs' square, and the Nejme (i.e., star) square. All these places are public walkways, gardens, or parks in Beirut. The participants supported their answers with their comments on the following photos (Figures 2, 3, 4, 5, 6, & 7).



Figure 2. The Corniche Beirut, a seaside public walkway facing high-end buildings (adapted from Maria A. El Helou photo archive)

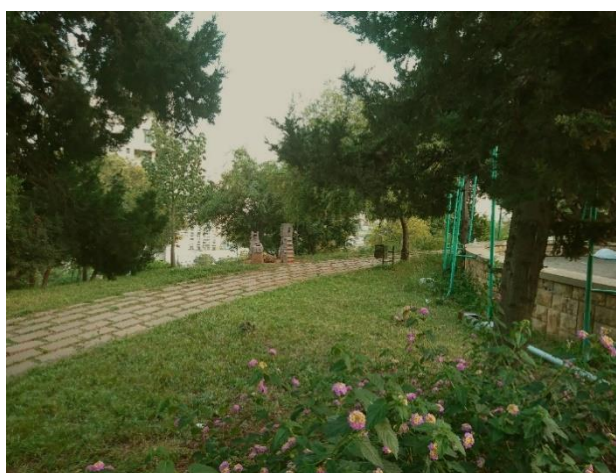


Figure 3. The Sioufi park in Achrafieh district, Beirut (adapted from Maria A. El Helou photo archive)

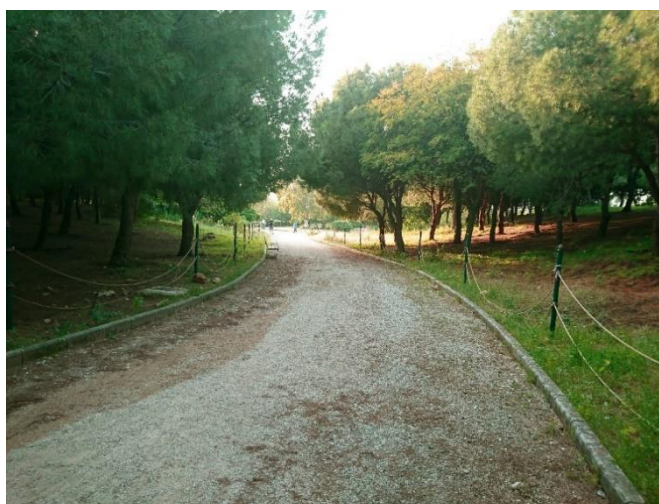


Figure 4. The Horsh Beirut Park, between Badaro, Qasqas, and Barbir areas, Beirut (adapted from Maria A. El Helou photo archive)



Figure 5. The René Mouawad garden, Sanayeh area, Beirut (adapted from Maria A. El Helou photo archive)

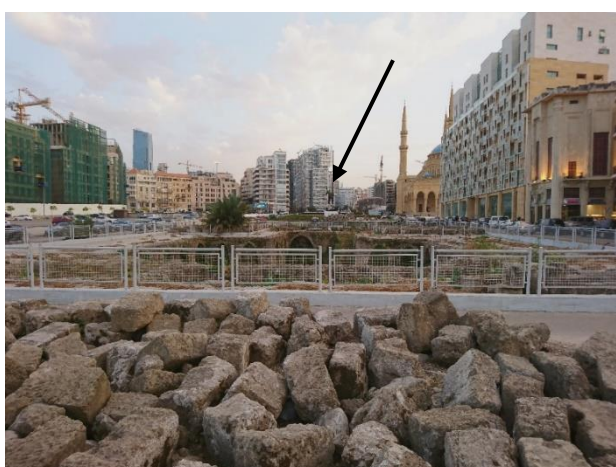


Figure 6. The Martyrs' Square (with the Martyrs' statue where indicated) and Roman ruins, Downtown, Beirut (adapted from Maria A. El Helou photo archive)



Figure 7. The Nejme Square, close to the Martyrs' Square, Downtown, Beirut (Maria A. El Helou photo archive)

4. Results

4.1 Answers by age category

Children: 70% of the children said that they are not able to play in the outdoors areas near their houses because their “parents find that the street is narrow and dangerous due to cars traffic” and because there are no more empty plots to play in near the house since high-rise buildings are being constructed. 50% of the children added that their parents would not let them go out for long periods by themselves because they are “concerned about the strangers who are increasing in number.” They defined strangers as people who do not come from families born and raised in the neighborhood they live in and whom they should not talk to. 60% of the children said that they go out with their parents on weekends, mainly to walk in malls and in summer they go to the beach. The other 40% answered that they go on weekdays and weekends to the beach in summer, to a mall, or to the park that is near their houses, always accompanied by one of their parents. 90% considered that children get fat because of candies and fast food that their “parents do not allow them to eat often” and 10% added that electronic games contribute to overweight.

Adolescents: 50% of the adolescents said that they often walk near the house but prefer not to walk long distances by themselves due to stories they were told about during school awareness or by their parents of “the harassments or thefts done by the strangers”. They also defined strangers as people who do not come from families born and raised in the neighborhood they live in and whom they should not talk to. The other 50% mentioned that they do not mind walking by themselves in different areas in Beirut (20% walk in Rene Mouawad garden, 10% walk in the Sioufi park, 10% in the Corniche Beirut, and 10% in the Horsh Beirut) because this is “our [their] city”; however, they mentioned paying attention while crossing streets because “the walkable streets are not connected, and crossing vehicles’ main roads is sometimes inevitable and highly dangerous”. 70% stated that they cannot practice their activities in outdoor spaces, limiting the movement to just walking, because “people will stare”, 10% of them revealing that they prefer going to classes to meet people “of a certain social class”, whereas 20% said that they could practice their activities outdoors because these activities are not physical and are limited in an electronic tablet. 60% answered that for friends’ gatherings, the mall is the most practical space because they can walk safely and have a large

choice of restaurants, 20 % preferred natural areas such as the beach or green space, and 20% asserted that the Corniche Beirut is great because "you get a beautiful natural ambiance of the sea of Beirut for free". 80% find that Beirut is missing more green parks and gardens and 20% mentioned the lack of bicycle lanes and the narrow sidewalks. 100% considered that the unhealthy food and water are contributing to overweight issues and 40% of these participants added that "the stress to fit in this society having the acceptable standard body measurements is a burden contributing to weight gain."

Young adults: 50% of the young adults find that walking in Beirut is unsafe because the offices they work in are far from walkable streets. They added that due to the fatigue they feel from long work hours, they prefer to rest at home or in a restaurant with a friend "rather than doing any kind of efforts". However, the 2 young adults participants who are married said that for their children they just go out for a walk on weekends in the Horsh Beirut park or the Corniche Beirut. 70% added that there are many strangers walking in their neighborhood streets and that driving to reach a walkable area is not something they would like to do "with the traffic congestion of Beirut". 30% said that they prefer going to indoor areas such as a class in a gym to meet people with the same hobby and have fun together. For gatherings, 70% mentioned restaurants and pubs, 10% talked about educational tours in Beirut "although they are somehow limited", and 20% preferred the Corniche Beirut. 90% remembered the empty plots they used to play in near their houses, mentioning that "returning home with dirty clothes was pleasurable", adding that "the new generation would not experience the kind of games we [they] used to play in the past due to limited empty spaces in Beirut". 60% remembered the Sioufi park very well and the Saint Nicolas garden (also in Achrafieh district) and 40% said that the Corniche Beirut reminded them of very nice memories they cannot experience anymore. 100% find that Beirut is missing more green parks and gardens, 50% mentioned the lack of bicycle lanes, and 70% mentioned the narrow sidewalks. 60% considered that unhealthy fast food is accelerating weight gain. They added that it is nearly impossible not to order these kinds of food when they are all day at work. 40% said that organic food and the healthy Lebanese food is what is helping people maintain a certain level of health and 50% mentioned the high levels of water and air pollution and believed that this pollution increase weight gain.

Finally, 70% of the participants are convinced that "high levels of stress due to the economic situation of the country" is impacting physical health and leading to weight issues because of "fast-paced responsibilities" such as having to pay for "expensive apartments, expensive phone, electricity, and supermarket bills, and the hard challenge to get married under these conditions".

Middle-aged adults: 80% of the middle-aged adults participants considered that "the streets are not walkable because the sidewalks are not well maintained." 60% said that they would prefer going to the gym to meet new people whereas the other 40% said that they would not mind going outdoor for a walk with their children or grandchildren at the René Mouawad park, the Sioufi park, and the Horsh Beirut park. For friends' gathering, 80% like to meet in restaurants, 30% of them mentioning their preferences for Lebanese food restaurants, whereas 20% prefer home visits because "it reminds me [them] of the Lebanese traditions". 90% considered that looking at the photos of the study is emotional especially when they were asked to remember the past. All the participants in this category agreed that the Martyrs' square had changed dramatically and that it is impossible to get back its past ambiance, when people used to walk a lot more than now. Again, all these middle-aged adult participants agreed that they would not walk again as much as they used to in the prewar Beirut (before 1975) and that "the new generation would never experience the Beirut we [they] knew," mentioning the walkable downtown with its famous souk. 90% agreed on having larger sidewalks and finding empty plots to turn them into gardens and parks. 70% said that the missing elements in Beirut are the souk, the green plots with fruit trees, and the six-story buildings with a small shared garden and sometimes a fountain; 50% adding that they think that solutions will not cover the whole Beirut due to their "feeling that nothing will change and that the cycle of pollution and crowdedness is worsening". One participant added that "I [he] think of my friends with disabilities. These friends were injured during the Lebanese civil war (1975-1990). They were defending the right of sovereignty of Lebanon. They deserve to have facilities and accessibility to the different places of Beirut, mainly through well-maintained sidewalks". Although 50% said that the Lebanese way of eating is healthy, the other 50% said that the trend of ordering food is hastening weight issues. 90% talked about "stress and responsibility that cause dysfunctions in the body according to what we [they] hear or

read in the media". 30% of the participants mentioned emotional eating as a way of distraction "to forget the reality we [they] are living in, leading to weight issues."

Older adults: 80% said that it is not easy to walk in Beirut because crossing the street is frequent and dangerous. They added that they could not walk in the places they used to walk in such as the downtown souk because "the souk spirit has changed." As for physical activities, 60% considered that there are no spaces designed for people of their age, and therefore, it is quite dangerous to do physical activities outdoors whereas 40% are just scared to do physical activities because of their medical conditions and the lack of knowledge between the activities that are good or bad to their conditions. For friends' gathering, 50% said that the old cafés were and still are the best choice as "it is a Beiruti habit from the days of the Daoud café and the Hamra cafés and many other cafés from the past until present." The other 50% said that home gathering around coffee is what reminds them of their past. All the participants in this category agreed that the green spaces are nearly inexistent in Beirut nowadays and that thanks to some shy municipal and individual interventions, these parks and other public spaces are still standing. 80% even added that "the smell of Beirut has changed forever because some trees and flowers no longer exist." For all the participants in this category, the missing elements are green public spaces and large sidewalks. 80% added that even if they go out, they no longer see the landscapes they used to see before such as the traditional "Beiruti house with the famous three arches and a small private garden with a fountain", and as a result, they would not enjoy the walk between "very high buildings". 80% said that the bad lifestyle habits of these days and the pollution are contributing to weight gain and 20% said that the sufferings people are going through to survive are increasing cases of overweight.

4.2. Main keywords

The results of the interview revealed several keywords highly mentioned by the participants: Crowdedness: 70% of the participants said that "urban spaces are crowded which leaves insufficient spaces for children to play safely."

Safety: 70% of the participants indicated the lack of pedestrian bridges and having to cross relatively large streets where cars stop on the pedestrian crosswalks. Furthermore, 80% mentioned the high danger of crossing the roads that frame at the Martyrs' square "where

in the past (prewar period) it was the trend to meet and walk." 60% criticized the size of the statue compared to the surrounding high-rise buildings, as well as the square's position with traffic congestion on its four sides, and the parking lots, mentioning that "our friends the martyrs would not be happy of the present situation of this square", whereas 40% said that they are happy that "this place is relatively well-maintained with the Roman ruins." According to 70% of the participants, the downtown is at present emptier than any other period because "the downtown that was once a place for all people of all social background is today more of a place for rich people and tourists."

Green Transportation Facilities: 50 % of the participants talked about the issue of the cars who park on sidewalks due to the streets narrowness which lowers the frequency of walking. They also mentioned their wish to have bicycle lanes and organized roads connectivity for pedestrians.

Cars and traffic congestion: 60% of the participants said that "the traffic congestion in Beirut is a sickness," describing how it can take hours to reach a destination that should take no more than 10 minutes "such as going from Achrafieh to Hamra," 40% adding that "cars prevail over pedestrians in Beirut."

Public transportation: 50% of the participants counted with nostalgia "the old days of the tramway and the train," wishing to have one day "at least organized bus stops," while 20% said that "it is quite impossible to get back this organized public transportation."

Pollution: 50% of the participants said that they "prefer driving with closed windows and turning on the air condition than walking or bicycling and inhale polluted air," 40% of them stating that "the honks alone are the pollution per se." 40% added that "streams are dry, and fountains we used to gather around and drink our "jallab" (syrup based on date molasses) are destroyed," and 60% mentioned the "garbage crisis that should be treated as soon as possible."

Income: "The lifestyle in Beirut is very expensive compared to my salary," said 40% of the participants. Furthermore, the Nejme Square, close to the Martyrs' Square is, according to 70% of the participants, emptier than ever because "the downtown is more of a place for rich people and tourists."

5. Conclusion

Beirut is a historic city that has historical patterns still discussed and remembered by Beirutis who are highly impacted by the collective memory. In the present time, Beirut is witnessing a growing

concern regarding overweight, obesity, metabolic syndrome, and the chronic illnesses that follow. Whether the root causes are genetic or emotional, the factors related to the physical built environment are of great importance. As a result, urban planners are ever more following the "new urbanism" guidelines of the WHO "healthy urban planning" (HUP) initiative that focus on both the physical urban shape and the human needs and factors for a satisfactory lifestyle that diminishes overall illnesses rates ([Barton, Grant, Mitcham, & Isourou, 2009](#)).

In the case of Beirut, such guidelines would include interventions in the visual and practical components of the built environment combined to the natural environment such as urban traffic strategies and the continuous observation and measurement of pollution on a hand and public physical and mental health on the other hand. Suitable urban planning would involve as well the integration of the urban heritage patterns with the new construction and the social Beirut character adding mix-use interconnections in neighborhoods. Furthermore, mending the scattered neighborhoods, especially the ones developed during the war of 1975-1990, will positively enhance the mobility in the city by organizing bus stops stations, sidewalks, and bicycle lanes. Added to that is the development and application of criteria to delineate the city's green areas that should be accessible for all its inhabitants, especially the ones with low income whose access to private clubs is limited or impossible. Likewise, sidewalks should be large enough to allow the accessibility for wheelchairs and strollers, and they should be well maintained to avoid any injury.

Moreover, developing green streetscapes increases the quality of a neighborhood and allows low-income dwellers to boost their morals because they will perceive that they live in a highly rated area. As a result, the reluctant residents will be more encouraged to get exposed to this healthy outdoor space and will strive for a pleasant experience relaxing in solitude (without feeling isolated), strolling, exercising, or socializing in a public yet undisturbed place. With such strategies, unemployed people, people with disabilities, and the elders will also be able to practice the activities they like to avoid gaining weight since they have already limited access to the daily movement.

In conclusion, the city should ensure diversity and mix use and easy connectivity to public open spaces and overall nonresidential destinations to revitalize the walkability in the city so that the shape of people reflects the

shape of the city and vice-versa, which reinforces the local identity. In natural surfaces with uneven levels, appealing stairs should be designed to help people cross specific areas more easily and to invite them to walk in general.

This revitalized identity will strengthen the sense of safety that engenders a healthy attachment to the city, motivating people to get involved in the city's activities and civic duties and in its economic needs and productivity.

Even though consumptive and non-consumptive transportation planning could be limited in the narrow streets surrounded by buildings, and even though empty plots are nowadays limited in Beirut, the application of solutions according to the case should be considered as a pilot study to save the rest of the regions in Lebanon in general.

6. Limitations

Future studies tackling the built environment's impact on obesity in Beirut should include more participants. A conceptual framework is required to perceive the links between obesity cases of Beirutis with the urban sprawl phenomenon in Beirut and rates of low income among the residents. Afterward, the focus should be on the link between the Beirutis obesity cases and their dietary patterns. Moreover, a more in-depth categorization according to precise BMI results based on the WHO standards should be taken into consideration through the cooperation with experts in the fields where weight is measured. Literature regarding the quality of food and water available in high-crowded residential neighborhoods should be analyzed along with the research of the urban planning that treats health issues in Beirut. All these analyses will help get a better picture and draw a lesson regarding the urban planning decisions and the environmental justice to heal all the city's dwellers from the civilization diseases equally through the future urban development results.

As a final point, a thorough work should be completed through teams of practitioners (architects, engineers, psychiatrists, environmental psychologists, economic development experts, experts in the urban legislation field, etc.) with the government and municipality representatives and the inhabitants' cooperation to get precise data about the present urban situation in Beirut.

Acknowledgment

I would like to express my gratitude to all the Beirutis participants for their collaboration. This

research did not receive any specific grant from funding agencies.

References

- Ashton, J. R. (2002). Healthy cities and healthy settings. *Promotion & Education*, 1, 12-14. DOI: [10.1177/10253823020090010109](https://doi.org/10.1177/10253823020090010109)
- Barton, H., Grant, M., Mitcham, C., & Tsourou, C. (2009). Healthy urban planning in European cities. *Health Promotion International*, 24(1), 91-99. DOI: <https://doi.org/10.1093/heapro/dap059>
- Barton, H., & Grant, M. (2013). Urban planning for healthy cities. *Journal of Urban Health*, 90(1), 129-141. DOI: <https://doi.org/10.1007/s11524-011-9649-3>
- Beirut Population. (2017-12-07). Retrieved April 2018. URL: <http://worldpopulationreview.com/>
- Berk, L. E. (2010). *Development Through the Lifespan* (Laureate Education, Inc., custom ed.). Boston, MA: Allyn & Bacon
- Booth, K. M., Pinkston, M. M., & Poston, W. S. C. (2005). Obesity and the built environment. *Journal of the American Dietetic Association*, 105(5), 110-117. DOI: [10.1016/j.jada.2005.02.045](https://doi.org/10.1016/j.jada.2005.02.045)
- Corburn, J. (2015). City planning as preventive medicine. *Preventive Medicine*, 77, 48-51. DOI: <https://dx.doi.org/10.1016/j.ypmed.2015.04.022>
- CNU (2007). *Charter of the New Urbanism*. Retrieved April 2018. URL: <https://www.cnu.org/who-we-are/charter-new-urbanism>
- Cutts, B. B., Darby, K. J., Boone, C. G., & Brewis, A. (2009). City structure, obesity, and environmental justice: an integrated analysis of physical and social barriers to walkable streets and park access. *Social Science & Medicine*, 69, 1314-1322. DOI: [10.1016/j.socscimed.2009.08.020](https://doi.org/10.1016/j.socscimed.2009.08.020)
- Day, K., Alfonzo, M., Chen, Y., Guo, Z., & Lee, K. K. (2013). Overweight, obesity, and inactivity and urban design in rapidly growing Chinese cities. *Health & Place*, 21, 29-38. DOI: <https://dx.doi.org/10.1016/j.healthplace.2012.12.009>
- Duhl, L. J., & Sanchez, A. K. (1999). *Healthy cities and the city planning process: a background document on links between health and urban planning*. World Health Organization: Copenhagen, Denmark. URL: <http://www.mentalhealthpromotion.net/?i=raining.en.bibliography.1947>
- Faour, G., & Mhawej, M. (2014). Mapping urban transitions in the greater beirut area using different space platforms. *Land*, 3, 941-956. DOI: [10.3390/land3030941](https://doi.org/10.3390/land3030941)
- Galea, S., Ahern, J., Rudenstine, S., Wallace, Z., & Vlahov, D. (2005). Urban built environment and depression: a multilevel analysis. *Journal of Epidemiology and Community Health*, 59, 822-827. DOI: [10.1136/jech.2005.033084](https://doi.org/10.1136/jech.2005.033084)
- Grahn, P., & Stigsdotter, U. K. (2010). The relation between perceived sensory dimensions of urban green space and stress restoration. *Landscape and Urban Planning*, 94, 264-275. DOI: [10.1016/j.landurbplan.2009.10.012](https://doi.org/10.1016/j.landurbplan.2009.10.012)
- Gunder, M., & Hillier, J. (2007). Planning as urban therapeutic. *Environment and Planning*, 39, 467-486. DOI: [10.1068/a38236](https://doi.org/10.1068/a38236)
- Hong, T. K., Trang, N. H. H. D., Dibley, M. J., Sibbritt, D. W., Binh, P. N. T., & Hanh, T. T. M. (2010). Factors associated with adolescent overweight/obesity in Ho Chi Minh city. *International Journal of Pediatric Obesity*, 5, 396-403. DOI: [10.3109/17477160903540735](https://doi.org/10.3109/17477160903540735)
- Jansen, A., Havermans, R., Nederkorn, C., & Roefs, A. (2008). Jolly fat or sad fat? Subtyping non-eating disordered overweight and obesity along an affect dimension. *Appetite*, 51, 635-640. DOI: [10.1016/j.appet.2008.05.055](https://doi.org/10.1016/j.appet.2008.05.055)
- Kaloustian, N. (2015). *On the urban heat island in Beirut*. Architecture, space management. Université Paris-Est. English. URL: <https://tel.archives-ouvertes.fr/tel-01305945/document>
- Lake, A., & Townshend, T. (2006). Obesogenic environments: exploring the built and food environments. *The Journal of the Royal Society for the Promotion of Health*, 126(6), 262-267. DOI: [10.1177/1466424006070487](https://doi.org/10.1177/1466424006070487)
- Mehio Sibai, A., Hwalla, N., Adra, N., & Rahal, B. (2003). Prevalence and covariates of obesity in Lebanon: findings from the first epidemiological study. *Obesity Research*, 11(11), 1353-1361. DOI: [10.1038/oby.2003.183](https://doi.org/10.1038/oby.2003.183)
- Mudede, C. (2011, June). Cities are made for humans. *The Stranger*. URL: <https://www.thestranger.com/slog/archives/2011/06/27/cities-are-made-for-humans>
- Najib (2014, May). 24 Public Gardens to Go to in Beirut. *BlogBaladi*. URL: <http://blogbaladi.com/24-public-gardens-to-go-in-beirut/>
- Northridge, M. E., Sclar, E. D., & Biswas, P. (2003). Sorting out the connections between the built environment and health: a conceptual framework for navigating pathways and planning healthy cities. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 80(4), 556-568. DOI: [10.1093/jurban/jtg064](https://doi.org/10.1093/jurban/jtg064)

- Southworth, M. (2005). Designing the walkable city. *Journal of Urban Planning and Development*, 131(4), 246-257. DOI: [10.1061/\(ASCE\)0733-9488\(2005\)131:4\(246\)](https://doi.org/10.1061/(ASCE)0733-9488(2005)131:4(246))
- Smith, D. M., & Cummins, S. (2009). Obese cities: how our environment shapes overweight. *Geography Compass*, 3(1), 518-535. DOI: [10.1111/j.1749-8198.2008.00198.x](https://doi.org/10.1111/j.1749-8198.2008.00198.x)
- Sui, D. Z. (2003). Musings on the fat city: are obesity and urban forms linked? *Urban Geography*, 24(1), 75-84. DOI: <https://doi.org/10.2747/0272-3638.24.1.75>
- The MNT Editorial Team (2016). What is Obesity?. *Medical News Today*. URL: <https://www.medicalnewstoday.com/info/obesity>
- Velásquez-Meléndez, G., Mendes, L. L., & Pádez, C. M. P., (2013). Built environment and social environment: associations with overweight and obesity in a sample of Brazilian adults. *Cadernos de Saúde Pública*, Rio de Janeiro, 29(10):1988-1996. DOI : <http://dx.doi.org/10.1590/0102-311X00078112>
- Wells, N. M., Ashdown, S. P., Davies, E. H. S., Cowett, F. D., & Yang, Y. (2007). Environment, design, and obesity. *Environment and Behavior*, 39(1), 6-33. DOI: <https://doi.org/10.1177/0013916506295570>
- Wolf, K. L. (2013). The urban forest. *Communities & Banking*, 24(2), 25-27. URL: <http://www.bostonfed.org/commdev>
- World Population Review (2018). *Beirut Population 2018*. URL: <http://worldpopulationreview.com/world-cities/beirut-population/>
- World Population Review (2018). *Lebanon Population 2018*. URL: <http://worldpopulationreview.com/countries/lebanon-population/>